

## Claims

1. Silicon substrate with positive etching profiles having a defined slope angle, obtained by etching of the silicon substrate, wherein the silicon substrate is covered by a mask and the following steps

a) iso-tropic etching of the silicon substrate, wherein the mask under etching  $u$  is approximately equal to the etching depth  $A_i$ ,

b) enlargement of the etching depth by iso-tropic etching with alternating, successively following etching steps and polymerization steps, wherein the mask under etching remains constant and wherein the etching front obtains a new course, and wherein the side walls of structure are covered with a polymer with this step,

c) removal of the polymer from the structure, and

d) repeating the steps a) through c) until the predetermined etching profile has been reached.

2. Method for plasma etching for generating positive etched profiles with defined slope angle in silicon substrates, wherein this silicon substrate is covered with a mask and wherein

a) silicon substrate is initially iso-tropically etched such that the mask under etching  $u$  is approximately equal to the etching depth  $At$ ,

b) following thereto the etching depth becomes enlarged by aniso-tropic etching with alternately successively following etching steps and polymerization steps, such that the mask under etching remains constant and the etching frowned obtains a new course, wherein the side walls of the structure are covered with a polymer in this step,

c) thereupon the polymer is removed at the side walls of the structure, and

d) the steps a) through c) and I repeated as many times until the predetermined etched profile has been reached.

3. Method according to claim 2 characterized in that the silicon substrate is isotropically etched in a  $SF_6$  - plasma.

4. Method according to claim 2 or 3 characterized in that the enlargement of the etching depth is performed by an aniso-tropic etching process, wherein the pressures for the process gases are from 1.0 to 5.3 Pa and the interval times amount to 3 to 12 seconds in the aniso-tropic etching process.
5. Method according to one of the claims 2 through 4 characterized in that the removal of the polymer is performed by way of an O<sub>2</sub> - plasma.
6. Method according to one of claims 2 through 5 characterized in that the slope angle  $\beta$  in the etching profile is determined by adjustment of a time ratio between the steps a) and b).
7. Method according to claim 6 characterized in that the step b) is prolonged and that the time ratio is therefrom determined.
8. Method according to claim 6 characterized in that the step a) is prolonged and that the time ratio is therefrom determined.